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ABSTRACT

Patron service is a high priority in the library setting and alleviating a large percentage of the directional questions will provide librarians with more time to help patrons more thoroughly than they are able to currently. Furthermore, in view of the current economic trend of downsizing, a navigational computer system program has the potential of reducing the number of support staff required to aid reference librarians by reducing the number of patrons visiting the reference desk. A study was conducted to: (1) determine whether or not a navigational computer program would reduce the number of support staff answering directional questions posed at the reference desk and (2) determine whether or not patrons would use a navigational computer program. A questionnaire consisting of 14 multiple choice questions was sent to museum directors throughout the United States; 39 were returned within the allotted time period. Section 1 of the questionnaire requested information about the museum and the director, specifically aimed to collect data regarding fees, educational level of the director, and his or her involvement in professional organization(s). Section 2 asked for information on the navigational computers used in the museum and sought to collect data on the use of these programs by visitors. Section 3 asked for information on the other types of computer technology utilized by the museum and the use of computer technology by the museum's visitors. Responses are discussed in detail. The main concern of the researcher was better service to the library patrons. The reduction of 53.9% of the directional questions asked at the reference desk (due to the navigational computer programs) would more than likely raise the level of service given to patrons by the reference librarian. The survey cover letter and questionnaire are appended. (Contains 30 references.) (Author/AEF)

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A Survey of Navigational Computer Program in the Museum Setting

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A Master's Research Paper submitted to the
Kent State University School of Library Science
in partial fulfillment of the requirements
for the degree Master of Library Science.

by

Paula Sliman

November, 1995

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INTRODUCTION

STATEMENT OF THE PROBLEM

The use of a navigational computer program in conjunction with a touch screen computer in libraries has the potential to greatly reduce the number of directional questions asked at the reference desk. The researcher addressed the question of the reduction of staff needed to answer directional questions at the reference desk by installing a navigational computer program that can guide patrons to the area of the library needed. Due to the lack of navigational computer programs in libraries currently, the researcher evaluated the use of navigational computer programs as a directional tool in museums and projected those findings to the library setting.

NEED FOR THE STUDY

In order for libraries to fully meet the needs of their community, librarians must have time to answer their reference questions. Patron service is a high priority in the library setting and alleviating a large percentage of the directional questions will provide librarians with more time to help patrons more thoroughly than they are able to currently. Furthermore, in view of our country's current economic trend of downsizing, a navigational computer system program has the potential of reducing the number of support staff required presently to aid reference librarians by reducing the number of patrons visiting the reference desk. A study was conducted to: (1) Determine whether or not a navigational computer program would reduce the number of support staff answering directional questions posed at the reference desk and (2) Determine whether or not patrons would use a navigational computer program.

RESEARCH QUESTIONS

Resulting from this project, the following research questions will be answered.

1. What is the degree of possibility that navigational computer programs reduce the number of support staff answering directional questions posed at the reference desk?

2. Are navigational computer programs and the equipment necessary to run them affordable for libraries?

3. Will patrons use navigational computer programs?

4. Are navigational computer programs simple enough to use that support staff is not needed to train patrons?

5. Does the degree status or membership to a professional organization affect the level of technology used?

6. Does the existence of other types of computer technology increase the probability of the use of navigational computer programs?

DEFINITION OF TERMS

For the purpose of this study the phrase **navigational computer programs** is defined as any computer program used solely as a directory and utilizes maps of the building's layout in order to direct patrons to their point of interest. The term **hypermedia** refers to "systems which support manipulation of and access to structured information."[1] **Directional questions** refers to questions posed at the reference desk that request information on the location of materials or services in the library. **Interactive video** in the context of this study refers to computer programs that require the user to make selections in order to progress through the program.

LIMITATIONS OF THE STUDY

One limitation of the study is the fact that the study was conducted using museums in place of libraries due to the lack of libraries currently using navigational computer programs. Another limitation of the study is that only museums that do not charge an entry fee or charge an entry fee of ten dollars or less with an attendance of 500,000 or more per year were included in the study; therefore, the possibility for a museum that utilizes navigational computer programs could be left out of the population.

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[1]Peggy M. Irish and Randall H. Trigg, "Supporting Collaboration in Hypermedia: Issues and Experiences,"Journal of the American Society for Information Science,40:3 (May 1989):192-199.

LITERATURE REVIEW

This literature review was completed by searching several online databases and cd-rom databases. The Online Public Access Catalogs (OPACs) used included Kent State University's Catalyst, Cleveland State University's Scholar and The Cleveland Public Library's Clevenet. Databases include Dialog, ABI, Arts & Humanities, Art Index, Information Science Abstracts, Sociofile, Psychfile, Dissertations Abstracts, Magazine Index, PAIS, Lisa, Library Literature and Eric.

Many articles have been published in the past five years on hypertext, hypermedia and interactive video. Unfortunately, there is little found in the literature that addresses the use of navigational computer programs in libraries or museums. Ben Sheinderman states in the opening paragraph in his article on hypertext installation in museums, "...research on the use of interactive databases in museums is nonexistent."[2] Apparently, there has been an oversight in the library science and museum fields that little to no research has been done on the use of computers as a directional tool.

EVALUATION OF LIBRARY LITERATURE

In 1967, Harriett Genung evaluated the use of Videosonic machines, a machine equipped with 35mm slides and audio component, to answer general, directional questions. Genung noted that the Videosonic machines "...were used almost immediately after they were placed..."[3] in the library's lobby.

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[2]Shneiderman, Ben and others. "Evaluating Three Museum Installations of a Hypertext System." Journal of the American Society for Information Science 40:3 (May 1989): 172-182.

[3]Genung, Harriett. "Can Machines Teach the Use of the Library?" College & Research Libraries 28:1 (January 1967): 25-30.

She also found that students were more apt to seek help from the machine than approach the reference librarian after installation of the machine. Genung expected use of the machines to fall off after initial curiosity waned; however, "...the usage in the lobby the following semester (after installation) made it necessary to keep at least two machines available."[4] Genung also noted that the librarians became comfortable sending patrons to the machine instead of answering their directional questions; thus, allowing the librarians more time with patrons who had reference questions. Genung states that these types of machines could be effective in any type of institution "...as a time-saving device...."[5] There were limitations and problems with the Videosonic machines that technology of our time has eliminated such as the slides jamming or the need for complicated buttons to operate the program. In her conclusion, Genung restates that "...the principle of involving a mechanical device to relieve staff time of mechanical and repetitious answers is sound."[6]

Since Genung's initial study on using machines to answer directional questions little research has followed. In 1987, Karen Williams researched installing an information desk in the lobby of the library at the University of Arizona. Williams' theory was identical to Genungs' theory in attempting to alleviate the number of directional questions asked at the reference desk in order to enable the "...reference staff to spend more time dealing with

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[4]Ibid., 27.

[5]Ibid., 29.

[6]Ibid., 30.

true reference questions...."[7] Williams found that due to the existence of the information desk "fewer directional...questions from walk-in patrons reached the reference desk."[8] Williams noted that the reference librarians were still very busy even though the information desk "...reduced the number of non-reference questions at the reference desk..." due to the fact that reference librarians were taken from the reference area to staff the information desk.[9] The use of navigational computer programs could eliminate the need for any staff members to man an information desk, thus, allowing the reference area adequate staff to answer reference questions.

Librarians have traditionally relied on locational and directional signs to help patrons find what they need. Gale Eaton, Michael Vocino and Melanie Taylor conducted research on the signs at the University of Rhode Island. The researchers found that locational and directional "...questions are excluded from study...."[10] In their study, they found patrons either found signs to be confusing or ignored the signs completely, relying on staff or fellow patrons for directions. One specific problem with library signs is "...the vocabulary of the signs was often library jargon, which might be meaningless to non-librarians."[11] Another conclusion was that newcomers and infrequent visitors find the signs difficult to understand whereas frequent library users

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[7]Williams, Karen. "Implementing an Information Desk: Avenues Toward Increased Quality of Reference and Loan Services. Summary and Evaluation of the Information Desk Experiment," Paper presented at the Annual Poster Sessions of the American Library Association 27-29 June 1987, 6, EDRS, ED290496, microfiche.

[8]Ibid., 5.

[9]Ibid., 6.

[10]Eaton, Gale, Michael Vocino and Melanie Taylor. "Evaluating Signs in a University Library." Collection Management 16:3 (1992): 81-97.

[11]Ibid., 85.

tend to rely on their memory of previous experiences at the library to find what they need.

The University of Iowa in July 1991 installed a computerized orientation system called the Library Navigator. This is currently the only navigational computer for libraries cited in the literature. Marsha Forys and others conducted and initial survey of users of this system. The study concluded the following results:

> Increased use of the Library Navigator for basic directional and library policy questions has allowed reference librarians to spend more time with patrons who re in need of in-depth reference assistance.[12]

Their research ends with that conclusion and lacks any statistical results. The need exists to continue this research in order to validate the findings of the researchers due to the limitation of the research.

EVALUATION OF MUSEUM LITERATURE

Literature on museums use of navigational computer software is as nonexistent as in the library literature. Several articles and books discuss the use of hypertext or hypermedia but fail to mention their use as a navigational tool. Ben Schneiderman and others evaluated the use of hypertext in three museums. The researchers found that hypertext was well-received by museum visitors. The visitors used the embedded menu feature more frequently than the traditional index to articles. They also found that the use of touch screen computers was convenient and easily used when a basic instruction screen or instruction panel was installed. There are many limitations to their research including lack of information of the users and inadequate

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[12]Forys, Marsha and others. "Library Navigator: An Electronic Orientation to the University of Iowa Libraries." Research Strategies 11:1 (Winter 1993): 39-41.

reporting of the average duration of each session. The researchers felt direct observation of users and interviews and/or surveys should be used in place of the data logs of the computer for a more accurate account of the visitor's use of hypertext.

Anne Morrall conducted an evaluation of hypertext software for museum databases in 1991. Her study compared different software packages. She notes certain criteria necessary for these packages to work well in the museum environment. Ease of use was the most important aspect. Museum visitors like library patrons come from all different backgrounds and the system must be accommodating to the both the novice and experienced computer user. Clear instructions on how to use the system and help screens being available throughout the program were other criteria to be considered when selecting hypertext packages. Morrall also notes security of the program as a major factor. The software must be secure from visitors' attempts to alter the program. Morall's study is limited to three specific hypertext packages and cannot be generalized to all hypertext programs.

Several books have been published on the subject of museums and computer. A Guide to Museum Computing explains several applications for computers.[13] After a brief introduction on the history of computers, Williams explains basic operations of computers and their capabilities including word processing, spreadsheets and security systems, there is a brief mention of networks. Most of the text is devoted to establishing a catalog for the museum's inventory.

Museum Collections and Today's Computers, picks up where Williams left

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[13]Williams, David W. A Guide to Museum Computing. Nashville, TN: The American Association for State and Local History, 1987.

off. An in-depth explanation of databases along with search strategies is covered.[14] Chenhall and Vance explain the use of digital imaging in order to include maps, sketches and photographs in the museum's catalog. Museum networks are discussed from what they are to how to connect to networks. Neither one of these books mentions hypermedia or its use in museums. Both of these books ignore the use of computers by museum visitors to enhance the museum visit.

The world is moving rapidly towards a technological existence. Library patrons and museum visitors are encountering new technologies everyday whether at school, the work place, the mall or the grocery store. In order to provide their patrons with a fulfilling visit to the library or the museum, these institutions need to keep up with the latest technologies. Library reference desks are seeing a high demand for information in this the "information age." In order for reference librarians to have the time to provide quality patron service, the use of navigational computers programs needs to be considered.

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[14]Chenhall, Robert G. and David Vance. Museum Collection and Today's Computers. New York: Greenwood Press, 1988.

PROCEDURES

METHODOLOGY

The survey methodology was used for this study. The instrument was a questionnaire which consists of fourteen multiple choice questions. The questionnaires was sent to museum directors throughout the United States. A copy of the questionnaire is in appendix B.

POPULATION

This study was conducted throughout the United States and involved non-fee charging museums and those museums with entry fees of $10.00 or less with an attendance of 500,000 or more per year. The museums were selected from The Official Museum Directory published annually by the American Association of Museums. This type of museum was chosen for several reasons. First, in order to imitate the library setting, non-fee charging museums were selected on the basis that the same type of patron who visit the library will visit free museums. Second, fee charging museums were selected for a second group in order to compare the technological differences between fee based and non-fee based museums. Third, museums with an annual attendance of 500,000 or more were selected due to the probability that they will be more technologically advanced than smaller museums with fewer attendance based on donations and grants received by larger museums enabling them to purchase computer equipment.

DATA COLLECTION AND INSTRUMENTATION

The literature review revealed that almost no research has been done in this area, therefore, the scope of the questionnaire was broad. The questions were designed to determine what current technologies are being used and the director's expertise in this area. Identical questionnaires were sent to both groups of museums. The responses to the questionnaire established specific technological materials each museums has and how the patrons interact with the navigational computer programs.

Section I (questions 1-5) of the questionnaire requested information about the museum and the director. Specifically, this section aimed to collect data regarding the fees of the museum. Also, this section collects data on the education level of the director and the involvement of the director in professional organization(s). Section II (questions 6-12) asked for information on the navigational computers used in the museum and sought to collect data on the use of these computer programs by museum visitors. Section III (questions 13-15) asked for information on the other types of computer technology utilized by the museum. This section also collected data on the use of computer technology (navigational and other types) by the museum's visitors.

Discussion of Results

The researcher sent sixty-five questionnaires throughout the United States. The following results are based on the thirty-nine questionnaires that were returned within the allotted time period. The discussion regarding navigational computer systems is based on the results of the thirteen museums which utilized navigational computer systems. The results have answered some of the researchers questions and in other cases, there was not enough information available to answer the researcher's questions.

An overview of the results of the entire questionnaire showed the following frequencies. In regards to the museums' entrance fees, 46.2% were non-charging museums and 53.8% charged between one dollar and seven dollars or more (see table I in appendix C). Special exhibit fees were charged by 5.1% of the museums surveyed and 38.5% of the museums did not charge any fee for these exhibits. The majority of the directors (56.4%) responded that it depended on the exhibit whether or not fees were charged (see table II in appendix C).

The education level of the director and the participation of the director in professional organizations produced the following results. Six of the thirty-nine museum directors held a Bachelors of Arts or Bachelors of Science. Two other directors held these degrees plus had additional credits. One of the directors held a specialist degree. The majority of directors have higher degrees. Eight of the directors have a masters degrees or masters degrees plus additional credits. Seventeen of the directors hold a Phd. In this category two of the questionnaires were left blank.

The museum directors participation in their professional organizations

was overwhelming. The respondents indicated that 87.2% belong to one or more professional organization. These organizations included the American Association of Museums, Association of Technology and Science Centers and various regional and state associations such as Kansas Museum Association, New Mexico Museum Association and Midwest Museum Association. Four directors responded that they did not participate in professional organizations. One questionnaire did not respond to this question.

As in the library setting, museums utilize various types of technology. Seventy-nine point five percentage employed some type of technology other than navigational computer systems. This technology includes laser discs, virtual reality, multimedia, interactive videos, databases, cd-roms and the internet. At the time of the study, 12.8% did not use any type of technology. The percentage of visitors utilizing the museums technology including navigational computer systems is broken down into four groups.

Group I ranged from 0% to 25% of the visitors utilized the available technology. This group consisted of 24% of the museums surveyed. Group II includes 26% to 50% usage of technology by visitors. This reflect 26% of the museums survey. Group III includes those museums whose museums' visitors utilize the technology 51% to 75% of the time. This group is 20% of the those surveyed. Group IV ranges from 76% to 100% of the visitors using the technology. The results show 30% of visitors are in group IV.

I. The directors were polled on the age groups utilizing the technology. Of those directors who responded to the survey, most found children and adults (ages 18 - 65) most likely to use the technology and adults age 65 and older were least likely to utilize the technology.

Based on the fourteen museums using navigational computer systems, the following conclusions were reached. Half of the museums charged fees and half did not charge fees for entrance to the museum. Those non-charging museums

would be most similar to public libraries whereas fee-charging museums can be compared to academic libraries where part of the students' tuition is allocated to the library. Although the data collected does not directly answer the question of accessibility, it appears that those libraries with similar budgets to the museums polled could indeed afford navigational computer systems. Accessibility were more than likely increase in the future as the technology becomes more inexpensive.

Professional librarians have a similar background to the museum directors polled. Librarians obtain higher degrees in the form of a Masters of Library Science and 78.5% of the museum directors also had a masters degree or higher. The more education the director has corresponded with the likelihood of utilizing a navigational computer system. Librarians have often found themselves on the forefront of technology with the computerization of several key components of the library field such as the catalog. In the survey, 92.3% of those museums using navigational computer systems had some other type of technology. This study did not show a relationship between the use of a navigational computer system and the use of other technology due to the fact that the majority of the museums polled had some type of technology. It is therefore difficult to conclude if the use of technology increased the likelihood of employing navigational computer systems. Although, if in fact it does influence the use of navigational computer systems, libraries would be the perfect setting to consider navigational computer systems as librarians have a history with technology.

In regards to the usage of navigational computer systems, directors reported that the majority of the visitors utilized the programs. Directors responded that 84% used the navigational computer programs frequently and 16% sometimes used the program. The principle behind using navigational computer systems in the library would be to reduce the time librarians spent with

patrons answering directional questions. If patrons needed substantial help in using the programs, the entire purpose would be defeated. The results of the survey indicated that 53.8% of the visitors needed no help at all and 30.77% seldom needed help. Only 15.38% responded that sometimes a visitor would require help with the program. As the museum visitor and the library patron are being compared in this study, the results would be the same in the library setting with patrons needing little or no help at all. The use of navigational computer systems did not reduce the use of other types of directional tools. Twelve of the fourteen directors found that visitors still employed alternate directional tools such as maps, guides and signs in conjunction with navigational computer systems.

As in the overall study, children and adults under 65 years of age were most likely to use the navigational computer system. The likelihood of use would depend on the patron profile of each library. Academic libraries where the majority of patrons fall into the adult category would see the most use of navigational computer systems compared to public libraries.

The following table illustrates the responses of the directors in regards to staff reduction.

has reduced number of staff	7.7%
has limited number of staff	46.2%
has not reduced number of staff	46.2%

As shown 53.9% of the directors responded that navigational computer systems directly reduced or limited the support staff needed to answer directional questions. The reduction of support staff in the library was not the main focus of the researcher. Rather, the reduction of directional questions posed at the reference desk. The reduction/limitation of staff in the museum setting can be correlated to the reduction of directional questions

being answered at the reference desk. Reducing these questions would free up the reference librarian to answer true reference questions of the patrons.

The main concern of the researcher was better service to the library patrons. The reduction of 53.9% of the directional questions asked at the reference desk would more than likely raise the level of service given to patrons by the reference librarian. Librarians would have more time to spend with those patrons needing help researching. As excellent patron service is a goal of many libraries, navigational computer systems may indeed be in the future for many libraries as one way to improve the service presently offered.

Future Directions

In future studies, improvements may be made in several areas. First, the study could be conducted in the library setting. This would improve the researchers ability to apply the results to the desired setting. Second, if the study must be conducted outside of the library setting, a wider range of museums should be included. This could be achieved by reducing the number of visitors each year or by increasing the fees charged. A larger number of museums would increase the chance of more museums with navigational computer systems. Third, the researcher would change the ratings used in question seven (Do visitors utilize the program?) and eight (Do visitors need help using the program?). These ratings are too vague, the research would request more concrete data such as the museums statistics on the use of navigational computer systems. These improvements would provide more accurate results for the researcher.

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APPENDIX A

Letter of Invitation

September 7, 1995

Re: Navigational Programs in the Museum Setting

I am a graduate student in the School of Library and Information Science at Kent State University. As part of the requirements for master's degree, I am conducting a survey on the use of computers by visitors in museums. The enclosed questionnaire will elicit information that will help me determine what type of computer technology museums are using and whether or not visitors utilize the available technology. This information would be useful to both theorists and practitioners in the field of library and information science.

Confidentiality and anonymity are guaranteed as you do not need to sign your name to the individual questionnaire; only the researcher has access to the survey data. There is no penalty of any kind if you choose to not participate in this study. While your cooperation is essential to the success of this study, it is, of course, voluntary. Also, you may withdrawal you participation at any point during the study. A copy of the results of the study will be available upon request.

If you have any further questions, please contact me at (216) 521-4336 or Julie Gedeon, my research advisor, at (216) 672-2782. If you have any further questions regarding research at Kent State University you may contact Dr. Eugene Wenninger, Office of Research and Sponsored Programs, at (216)672-2851.

Thank you very much for your cooperation. You may return the questionnaire in the enclosed self-addressed stamped envelope to me at the address below by September 29, 1995:

Paula Sliman
1445 Lakewood Avenue
Lakewood, Ohio 44107

Sincerely,

Paula Sliman
Graduate Student
Kent State University

APPENDIX B

Survey Instrument

Questionnaire: Navigational Computer Programs in the Museum Setting

OUTLINE OF STUDY

This survey attempts to identify the computer technology currently being used in museum by museum visitors. Navigational software, software package that directs visitors to specific areas of the museum, is the main focus of the survey. However, all computer technology that is being used is of interest to the researcher. The survey is composed of three sections. The sections are divided as follows:

Section I asks some general information about yourself and the museum.

Section II asks information on the navigational or directional computers used in the museum and the use of these computers by the visitors.

Section III asks information on the other types of computer technology used by museum visitors.

Your responses to these questions are of considerable value to me. I look forward to receiving your completed survey.

Section I

Please check the appropriate responses.

1. Museum Fees: How much is the entrance fee?

_____no entrance fee and and no donation
_____no entrance fee but donation preferred
_____$1.00 to $3.00
_____$3.01 to $5.00
_____$5.01 to $7.00
_____$7.01 or more

2. Special Exhibits Fees: Is there an admission fee for special exhibits?

_____yes _____no _____depends on the exhibit

3. Level of Education of the director: (check most advanced degree)

_____B.A. or B.S. degree
_____B.A. or B.S. degree plus additional undergraduate or graduate credits
_____Master's degree
_____Master's degree plus additional undergraduate or graduate credits
_____Specialists degree
_____Ph.D.

4. Are you a member of professional organizations?

_____yes (please list) _____no

_____

_____

_____

_____

Section II

5. What directional devices does the museum currently utilize? (check all that apply)

_____navigational computer program
_____information desk
_____signs
_____maps on walls or free standing
_____printed map guides

6. If your museum uses a navigational computer program what type is is it? If no, skip to section III.

_____

7. Do visitors utilize the program?

_____frequently
_____sometimes
_____seldom
_____not at all

8. Do visitors need help using the program?

_____frequently
_____sometimes
_____seldom
_____not at all

9. Do visitors use alternate directional tools after using the program?

_____yes, please specify type _____no
_____
_____
_____

10. Has the use of a navigational computer program alleviated the need for alternate directional tools?

_____yes _____no

_____some but not all, list tools still used
_____
_____
_____

11. Has the use of a navigational computer program alleviated the need for staff at an information desk?

_____yes _____no _____limited the number needed

Section III

12. Please specify the types of computer technology provided for museum visitors (databases, interactive video, laser discs, etc).

_____
_____
_____

13. What percentage of visitors utilize the computer technology?

_____0% to 25% _____51% to 75%

_____26% to 50% _____76% to 100%

14. What age group is the technology used most frequently by the visitors? (please rate 1 to 3 with 1 being most frequent user).

_____children under 18 years old
_____adults 18 year old to 64 years old
_____adults 65 years and older

APPENDIX C

Tables

Table I: Museum Fees

no entrance fee & no donation	23.1%
no entrance fee donation preferred	23.1%
$1.00 to $3.00	2.6%
$3.01 to $5.00	12.8%
$5.01 to $7.00	12.8%
$7.01 or more	25.6%

Table II: Special Exhibit Fees*

Charges for special exhibits	5.1%
Does not charge for special exhibits	38.5%
Charges depend on exhibit	53.8%

*One questionnaire was returned blank.